REMARKS

Favorable reconsideration of the present application is respectfully requested.

Claim11 has been amended for clarity responsive to the rejection under 35 U.S.C. § 112, which is believed to be moot. The scope of the claim has not been altered.

Claims 1 and 2 have again been rejected under 35 U.S.C. § 102 as being anticipated by Serizawa et al., as have Claims 11-14. This rejection is respectfully traversed.

As was explained in the last response, Claim 1 recites that the steering angle threshold value variation unit dynamically changes the upper limit point and lower limit point of the permissible steering angle range based upon the vehicle speed, as is exemplified at Step 830 in Figure 8. This is not taught in Serizawa et al., wherein the maximum steering angle θ_{Hlim} is described at lines 11-35 in col. 8 and is not based on the vehicle speed.

More specifically, the steering reaction force is set according to steps S11-S37 in Serizawa et al. As part of this, it is first determined if the steering angle command value $\delta_{f(n)}$ is less than or equal to a "prescribed" maximum value δ_{flim} (col. 6, lines 28-34). If this is determined to be the case at step S11, the current *measured* steering angle $\theta_{H(n)}$ is substituted into θ_{Hlim}: "Thus the largest possible value of the steering angle can be set up" (col. 8, lines 19-20). It may therefore be appreciated that "the largest possible value of the steering angle" is the "prescribed" maximum value δ_{flim}, or a *measured* value exceeding δ_{flim}, and is not changed based upon the vehicle speed.

The Office Action states that columns 5-6 of Serizawa et al. teach changing the upper and lower limit points of a permissible steering range based on vehicle speed. However, while Serizawa et al. teaches considering the vehicle speed, there is no evidence that this information is used to change the upper and lower limit points of a permissible steering range. For example the coefficients C_0-C_2, C_C and d_1 which are dependent on the vehicle speed (col. 6, lines 22-24) are only used in equations (3)-(6) and (14) to determine the yaw

rate and the steering angle command value $\delta_{f(n)}$ at step S10, not $\theta_{H(n)}$ or the upper and lower limit points of a permissible steering range.

Applicants further note the statement on page 4 of the Office Action that the limit points of the permissible steering range are changed in Serizawa et al. in accordance with the vehicle speed because column 8 describes "substituting a measured value of a steering angle into a variable θ_{Hlim} ... wherein the value is obtained using equations that contain a variable coefficient associated with the vehicle speed." However the Examiner's attention is respectfully directed to the fact that the value substituted into θ_{Hlim} is not the steering angle command value $\delta_{f(n)}$ which "is obtained using equations that contain a variable coefficient associated with the vehicle speed." The steering angle command value $\delta_{f(n)}$ is only used to compare to δ_{flim} at step S11. Instead, the value substituted into θ_{Hlim} is the *measured* steering angle $\theta_{H(n)}$, which is measured and not obtained using equations that contain a variable coefficient associated with the vehicle speed (col. 4, lines 55-56). Thus it is respectfully submitted that Serizawa et al. does not teach a steering angle threshold value variation unit that dynamically changes the upper limit point and the lower limit point of the permissible range, based on a vehicle speed.

Claim 11 recites that the steering actuator imparts a steering reaction force to the steering wheel based upon the *sum* of the reaction force signal from the reaction force control means and a virtual contact resistance force signal from an end of movement reaction force generation control means. For example, the reaction force motor 4 in Figs. 3 and 5 receives signal i_1 from the reaction force control portion 5 and signal i_2 from the end reaction force control portion 20 (21), which signals are summed to provide the steering reaction force (equation 1; step 850 in Fig. 8). Since i_2 does not affect the steering motor 6, heat build-up or damage in the motor is minimized.

There is no description in Serizawa et al. of an end of movement reaction force generating means which generates a virtual contact resistance force signal, wherein the signal actuator imparts a steering reaction force to the steering wheel based upon the *sum* of a reaction force signal from a reaction force control means and a virtual contact resistance force signal from an end of movement reaction force generation control means. Serizawa et al. instead only provides that the steering reaction force is sharply increased or oscillated when such end of movement has been reached, in order to inform the vehicle operator. Therefore, when the end of movement limit is recognized, a maximum steering reaction force T_{lim} is substituted into the steering reaction force T at step S30 so that the torque is sharply increased (col. 8, lines 26-35).

Thus while Serizawa et al. broadly teaches increasing the steering reaction torque at the limit of the permissible steering range, it does not suggest that this be done by imparting a steering reaction force to the steering wheel based *on the sum of*: (1) a reaction force signal based on a signal to a vehicle wheel steering actuator, and (2) a separate virtual contact resistance force signal. Claim 11 therefore also defines over Serizawa et al.

Applicants therefore believe that the present application is in a condition for allowance and respectfully solicit an early notice of allowability.

Respectfully submitted,

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